THE RECOVERY KERNEL

Substance-Specific Navigation Series

HOW TO RECOVER FROM NOVEL PSYCHOACTIVE SUBSTANCES

Synthetic Cathinones (Bath Salts) and Synthetic Cannabinoids (Spice/K2)

Using the Recovery Kernel Framework

Bath Salts · MDPV · Alpha-PVP (Flakka) · Mephedrone · Methylone / Spice · K2 · Black Mamba · Kush · Scooby Snax · Synthetic Weed

⚠ HARM REDUCTION RESOURCE — NOT MEDICAL ADVICE | Crisis: call 911 or text 988

SYNTHETIC CATHINONES: EXCITED DELIRIUM AND CARDIAC ARREST CAN OCCUR. CALL 911 FOR EXTREME AGITATION OR COLLAPSE.

SYNTHETIC CANNABINOIDS: NO REVERSAL AGENT EXISTS. CALL 911 FOR SEIZURE, CARDIAC EVENT, OR PSYCHOSIS.

These substances evade drug testing and scheduling. The specific compound may be unknown. The dose is always unknown.

How to Use This Guide

This guide covers two categories of novel psychoactive substances (NPS) that share a common origin — deliberate molecular engineering to evade drug scheduling — but have entirely different pharmacological mechanisms, dangers, and recovery architectures.

Category	Mechanism	Primary dangers	Recovery family
Synthetic cathinones (bath salts, MDPV, alpha-PVP, mephedrone)	Stimulant: dopamine/norepinephrine/serotonin reuptake inhibition and release — like cocaine and MDMA, but more potent and more psychosis-	Excited delirium, cardiac arrhythmia, psychosis, hyperthermia, death	Stimulant recovery family (cocaine/meth guide framework) with critical amplifications

	prone		
Synthetic cannabinoids (Spice, K2, Black Mamba)	Full CB1 cannabinoid receptor agonist — dramatically more potent than THC (partial agonist). Not cannabis.	Psychosis, seizure, cardiac event, acute kidney injury, no reversal agent	Cannabis recovery family but with critical amplifications for full agonist receptor downregulation

Find your category (Part A or Part B) and navigate directly. The integrated closing (Section 7) addresses both together.

PART A — SYNTHETIC CATHINONES

Bath Salts · MDPV · Alpha-PVP (Flakka) · Mephedrone · Methylone · Alpha-PHP · PV8

Cocaine's architecture, MDMA's social engineering, methamphetamine's duration — packaged to evade scheduling.

Part A: A Note Before You Begin

Synthetic cathinones are beta-keto amphetamines — structurally derived from cathinone, the active compound in khat. They are the stimulant family's Novel Psychoactive Substance branch: designed to produce cocaine-like, MDMA-like, or methamphetamine-like effects through the same fundamental mechanism (monoamine reuptake inhibition and/or release), while being molecularly distinct enough to evade whatever scheduling is currently in effect.

The chemsex guide in this series addresses mephedrone and methylone in their most common clinical context — use in MSM sexual settings alongside crystal meth and GHB. That guide covers the chemsex-specific dimensions comprehensively. This guide addresses synthetic cathinones as a broader category: the MDPV and alpha-PVP (flakka) that devastated lower-income US communities with psychosis and excited delirium incidents from 2012 to 2016; the wider cathinone market that continues to evolve faster than scheduling can address it; and the recovery framework for people whose stimulant of choice happened to be a synthetic cathinone rather than cocaine or methamphetamine.

The compendium's stimulant framework applies — the dopamine architecture, the Warrior COMT constitution, the DRD2 A1 receptor deficit, the natural intensity architecture of recovery. What this guide adds is what makes synthetic cathinones specifically different from the classical stimulants the series already covers.

Section 0A — Immediate Safety: Synthetic Cathinones

⚠ EXCITED DELIRIUM ASSOCIATED WITH MDPV AND ALPHA-PVP IS A MEDICAL EMERGENCY. EXTREME AGITATION, HYPERTHERMIA, APPARENT SUPERHUMAN STRENGTH, AND CARDIOVASCULAR COLLAPSE CAN OCCUR. CALL 911. DO NOT ATTEMPT TO RESTRAIN AGGRESSIVELY — THIS COMPOUNDS THE CARDIAC RISK.

0A.1 — Excited Delirium: The MDPV/Alpha-PVP Emergency

Excited delirium (now often called Excited Delirium Syndrome or ExDS) is a medical emergency associated specifically with high-potency cathinone stimulants — MDPV and alpha-PVP most prominently. It does not occur with equivalent frequency from cocaine or methamphetamine. The syndrome reflects the unique combination of extreme dopamine dysregulation, severe hyperthermia, and the autonomic storm these compounds produce at their highest intensities.

Feature	What it looks like	Response
Extreme agitation and combativeness	The person is in a state of profound terror and/or aggression that does not respond to verbal de-escalation. They may not recognize people they know. Strength and pain insensitivity appear dramatically elevated.	Call 911 immediately. Do not attempt physical restraint — the catecholamine surge from forcible restraint compounds hyperthermia and cardiac risk. Maintain a calm voice and distance. Protect from self-harm and traffic.
Hyperthermia	Core body temperature reaching 40–42°C (104–108°F). The skin is hot and flushed. The hyperthermia is the primary kill mechanism — the same mechanism as in crack cocaine and MDMA heat emergencies, but more severe and more common with MDPV/alpha-PVP.	Cool the person as much as possible — cool water, cool environment, ice to neck/armpits/groin. This is life-saving pending EMS arrival. Continue cooling until help arrives.
Cardiovascular collapse	After a period of extreme agitation and hyperthermia, sudden cardiovascular collapse can occur — ventricular fibrillation or other arrhythmia. This can follow either the active agitation phase or the calming of the agitation.	CPR if collapse occurs. AED if available. Do not assume the person is 'sleeping it off' if they suddenly become unresponsive after agitation. This is a recognized transition in excited delirium syndrome.
Extreme psychosis	Paranoid delusions, auditory and visual hallucinations, loss of contact with reality — more severe and more common than with cocaine or meth at equivalent stimulant doses. MDPV and alpha-PVP specifically have a high psychosis liability.	Medical management — benzodiazepines for acute agitation (lorazepam or diazepam). Antipsychotic medication (haloperidol or droperidol) in emergency department settings. Tell EMS the specific substance: synthetic cathinone — MDPV or flakka — if known.

0A.2 — The Unknown Compound Problem

⚠ THE MOST DANGEROUS THING ABOUT SYNTHETIC CATHINONES IS THAT THE SPECIFIC COMPOUND IS UNKNOWN. 'BATH SALTS' IS A CATEGORY, NOT A SUBSTANCE. WHAT IS SOLD AS ONE CATHINONE MAY BE ANOTHER ENTIRELY, WITH DIFFERENT POTENCY, DURATION, AND TOXICITY.

Unlike cocaine (cocaine hydrochloride), methamphetamine (methamphetamine hydrochloride), or MDMA (3,4-methylenedioxymethamphetamine), 'bath salts' is a street category that may contain any of dozens of synthetic cathinone compounds, frequently mixed, with no labeling that reflects actual content. The dose is always unknown. The compound is always uncertain. This is the defining harm profile of this substance category and cannot be mitigated by any individual harm reduction practice beyond not using.

- Fentanyl test strips: while designed for opioids, carry them and test any powder substance — fentanyl has been detected in cathinone supplies
- Reagent testing: Marquis reagent will turn colors with cathinones but cannot distinguish between specific cathinones or identify mixtures
- Start with extremely small amounts if testing is proceeding and supply is unverified
- Never use alone — the excited delirium and cardiac risk require someone present who can call 911

Section 1A — What Synthetic Cathinones Did

THE CENTURION — The Stimulant Architecture — Amplified and Destabilized

Synthetic cathinones operate through the same fundamental mechanism as cocaine and methamphetamine: inhibition of monoamine reuptake transporters (DAT, SERT, NET) and/or reversal of these transporters to promote monoamine release. The specific pharmacological profile varies dramatically between compounds:

Compound	Primary mechanism	Closest classical equivalent	Key distinction from classical equivalent
MDPV (Methylenedioxypyrovalerone)	Potent DAT and NET reuptake inhibitor — NO serotonin component	Cocaine — but 10x more potent as a dopamine reuptake inhibitor	Pure dopamine/norepinephrine — no serotonin softening effect; directly associated with the most severe psychosis and excited delirium cases; extraordinarily compulsive due to very short half-life (~30 min) and very high potency

Alpha-PVP (α-Pyrrolidinopentiophenone) — 'Flakka'	DAT and NET reuptake inhibitor — similar to MDPV; slightly less potent	MDPV — structurally similar, similar profile	The compound most associated with the Florida 'flakka' epidemic (2014–2016). Highly lipophilic — rapid brain entry. Excited delirium, public psychosis incidents, 'superhuman strength' reports. Very high psychosis liability.
Mephedrone (4-methylmethcathinone, 4-MMC)	Releases AND inhibits reuptake of dopamine, serotonin, and norepinephrine — triple mechanism	MDMA and cocaine combined — compendium lists it in the chemsex drug category	Shorter-acting than MDMA; more compulsive due to shorter duration; less emphatic on the oxytocin-mediated connection quality; more stimulant-dominant. In the UK and Europe, most commonly encountered in club and chemsex contexts.
Methylone (beta-keto MDMA)	Triple reuptake inhibitor — similar to mephedrone but with a pharmacological profile closer to MDMA	MDMA — but shorter duration, less empathogenic, more stimulant character	The most MDMA-like synthetic cathinone. Shorter duration drives more compulsive redosing than MDMA. Also appears in chemsex context.
Alpha-PHP, PV8, PV9, MPHP (higher-generation pyrovalerones)	DAT/NET inhibitors of progressively higher potency — the 'next generation' after MDPV and alpha-PVP scheduling	MDPV — similar profile, often more potent	The constantly evolving 'next analog after scheduling' landscape. PV8 and PV9 in particular are highly potent. Long half-lives relative to alpha-PVP. Increasing prevalence in European NPS markets from 2020 onwards.

1A.2 — Why Synthetic Cathinones Cause More Psychosis Than Cocaine

THE CENTURION — The Pure Dopamine Problem: No Serotonin Brake

The compendium's precision vocabulary section names cocaine's mechanism: 'triple reuptake inhibition.' Cocaine blocks DAT, SERT, and NET approximately equally. The serotonin component — the SERT blockade — is the mechanism that produces cocaine's social and somewhat empathogenic qualities and that may also provide a 'brake' on the pure dopaminergic drive.

MDPV and alpha-PVP have essentially no serotonin component. They are pure dopamine and norepinephrine compounds. At equivalent stimulant intensities, the absence of the serotonergic modulation produces a more raw, paranoid, and psychotically organizing state. The dopamine surge in the mesolimbic system without serotonin's tempering influence is the pharmacological architecture of cocaine-induced paranoia — but amplified and more consistent.

For the person with a pre-existing psychosis vulnerability (COMT Met/Met, DRD2 A1 allele, personal or family history of schizophrenia or bipolar disorder) — MDPV and alpha-PVP represent a dramatically higher psychosis precipitation risk than equivalent dose cocaine. For people without those vulnerabilities, the psychosis risk at high doses is still substantially higher than for cocaine.

1A.3 — The Compulsive Redosing Architecture

The most clinically important behavioral feature of high-potency synthetic cathinones is the compulsive redosing that their pharmacokinetics demand:

- MDPV half-life: approximately 30–60 minutes for the primary stimulant effect. The crash comes fast. The craving for the next dose is immediate and total.
- Alpha-PVP: similar short half-life. The 'flakka binge' — days of continuous use with redosing every 30–60 minutes — is the typical heavy use pattern.
- The binge-to-crash cycle runs on a shorter timeline than crack cocaine. The financial devastation is correspondingly faster. The neurological damage accumulates more rapidly.
- The 'fiend' pattern: the person cannot stop during a binge regardless of desire. This is not weak willpower — it is the pharmacokinetic trap of very high potency, very short duration, with each crash providing an overwhelming biological signal that the only available relief is the next dose.

Section 2A — Genomic Blueprint

The genomic profile for synthetic cathinone recovery is identical to the stimulant recovery genomic profile. Apply the cocaine/methamphetamine guide's genomic framework with the following cathinone-specific interpretations:

Gene	Variant	Cathinone-specific notes
COMT	Val158Met (Val/Val = Warrior)	Val/Val (Warrior) — the primary cathinone vulnerability profile, identical to cocaine. The fast dopamine clearance and intensity-seeking Warrior constitution was drawn to MDPV/alpha-PVP's extreme dopamine signal. Recovery architecture: same as cocaine/meth — the Warrior needs genuine high-intensity alternatives. The dual-COMT risk: Met/Met (Sage) combined with pure-

		dopamine cathinones (MDPV, alpha-PVP) creates the highest psychosis risk combination in the stimulant category.
DRD2 / ANKK1	Taq1A — A1 allele (reduced D2 density)	Reward Deficiency Syndrome underlying cathinone use — same as for cocaine, meth, crack. The A1 allele carrier's reward circuit has always been 'not enough.' MDPV's extraordinary dopamine potency was the first time the circuit ever fully fired. Recovery: Brain Stack (UMP + DHA + CDP-Choline) for receptor density upregulation. Most important structural supplement target.
DAT1 / SLC6A3	10-repeat (high DAT expression)	High DAT expression means rapid baseline dopamine clearance — the cathinone's DAT blockade produces a more dramatic relative effect because it is blocking a transporter that is clearing dopamine unusually fast. Also: ADHD association. Significant proportion of synthetic cathinone users have undiagnosed or undertreated ADHD that the stimulant effects were managing.
MTHFR	C677T, A1298C	Same methylation foundation as all stimulant recovery. 5-MTHF is often transformative for the mood deficit that cathinone stimulation was compensating for. MTHFR variants may have contributed to the baseline dopamine synthesis deficit that made the cathinone's dopamine flooding so compelling.
BDNF	Val66Met	Synthetic cathinone use — particularly the high-dose MDPV/alpha-PVP binge pattern — produces significant prefrontal BDNF suppression. Met carriers face slower cognitive recovery. Exercise (non-optional) is the BDNF driver. Semax peptide for accelerated prefrontal repair in heavy use histories.

Section 3A — Biological Reconstruction

THE CENTURION — The Stimulant Recovery Framework — Applied to the Most Potent Available Cathinones

The biological reconstruction protocol is the cocaine and methamphetamine guides' framework applied directly. The cathinone-specific considerations are in the urgency and severity calibration — MDPV and alpha-PVP, because of their extraordinary potency and the severity of their binge pattern, produce more extreme dopamine depletion and more severe D2 receptor downregulation than equivalent-duration cocaine use. The recovery is the same framework, the timeline may be longer, and the underlying condition treatment (ADHD, depression) is more likely to be primary.

Supplement	Dose	Timing	Cathinone-specific notes

5-MTHF + Methylcobalamin	5-MTHF 400–1000mcg; MethylB12 1000–2000mcg	Morning	Methylation foundation for dopamine (and serotonin for mephedrone/methylone) synthesis. For MTHFR variant carriers, this is often the most impactful early supplement.
L-Tyrosine or Mucuna pruriens	Tyrosine 500–2000mg or Mucuna 100–300mg L-DOPA	Morning, away from protein	Dopamine precursor. The primary dopamine reconstruction target. For mephedrone/methylone users: add 5-HTP (after 3–5 days cessation) alongside for the serotonin dimension of the reconstruction.
Brain Stack — Uridine + DHA + CDP-Choline	UMP 250mg; DHA 1g; CDP-Choline 250mg	Morning	D1/D2 receptor density upregulation — the most important structural recovery target for the Reward Deficiency Syndrome profile. This is the compound that builds what MDPV was flooding. Takes weeks to months — begin Day 1.
NAC (N-Acetyl Cysteine)	600–1800mg daily divided	Morning and evening	Glutamate homeostasis — craving reduction; antioxidant for the extreme oxidative stress of cathinone binge patterns. Multiple clinical trials for stimulant craving reduction. Begin Day 1.
Magnesium glycinate	400–600mg elemental	Evening	Anxiety reduction; sleep support; cofactor for dopamine synthesis. The anxiety of cathinone crash — the pure dopamine crash without serotonin softening — is more severe than cocaine crash for MDPV/alpha-PVP users.
5-HTP (for mephedrone/methylone users only)	50–100mg	Evening, 3–5 days after cessation	Serotonin reconstruction for the SERT-component cathinones (mephedrone, methylone). Do not add to MDPV/alpha-PVP recovery without evidence of serotonin involvement — these are pure dopaminergic compounds.

3A.2 — Psychosis Management in Early Recovery

⚠ CATHINONE-INDUCED PSYCHOSIS MAY PERSIST FOR DAYS TO WEEKS AFTER CESSATION — LONGER THAN COCAINE OR METH-INDUCED

PSYCHOSIS IN SOME CASES. IF PSYCHOTIC SYMPTOMS PERSIST BEYOND 48 HOURS AFTER LAST USE: PSYCHIATRIC EVALUATION IS INDICATED.

- Acute psychosis (during or immediately after use): benzodiazepines are first-line — diazepam 10mg or lorazepam 2mg. Reduces agitation without the QTc prolongation risk of some antipsychotics.
- Persistent psychosis (beyond 48 hours): psychiatric evaluation. Short-course atypical antipsychotic (risperidone, quetiapine, olanzapine) while the dopamine system rebalances.
- Sleep as primary psychosis intervention: psychosis severity in stimulant cessation correlates with sleep deprivation. Forced sleep opportunity (safe environment, dark, quiet) is the single most effective non-pharmacological intervention. Quetiapine at low dose (25–50mg) serves dual purpose: sleep support and dopamine modulation.
- Monitor for persistent psychotic disorder: if psychosis does not resolve within 2–4 weeks of abstinence with adequate sleep, independent psychotic disorder (not substance-induced) must be considered. Psychiatric evaluation required.

3A.3 — The Craving Interrupt

THE CENTURION — The Fastest and Most Intense Craving in the Stimulant Category — Calibrated for the 30-Minute MDPV Clock

MDPV and alpha-PVP cravings are the fastest-converting craving in the stimulant category. The combination of extreme potency, very short duration, and the pure-dopamine crash produces a craving signal that converts to use within minutes rather than the longer window of cocaine or meth cravings. The interrupt must work in that window.

1. IMMEDIATE INTENSE PHYSICAL INTERRUPT. Sprints, cold water, push-ups — something genuinely overwhelming that competes with the craving signal before it completes. This is the first 60 seconds.
2. MOVE PHYSICALLY AWAY FROM THE USE ENVIRONMENT AND SUPPLY. The most important single variable for the short-window cathinone craving.
3. CALL OR TEXT. Isolation is the most dangerous craving state for pure-dopamine cathinones. Connection is the counter-signal.
4. 4-7-8 BREATHING — EIGHT CYCLES. After the initial physical interrupt.
5. NAC AND TYROSINE. The dopamine precursor and the glutamate homeostasis compound — pharmacological support for a pharmacological craving state.
6. EXECUTE HIGHEST-INTENSITY NATURAL REWARD. From the Warrior natural architecture. The cathinone craving requires a real-intensity response — insufficient alternatives do not interrupt it.

3A.4 — Natural Architecture for Cathinone Recovery

The compendium's C-28 Warrior architecture applies directly. The person who was using MDPV or alpha-PVP for their extraordinary dopamine intensity was the Warrior seeking the loudest possible signal. The natural architecture for this recovery is identical to the crack cocaine guide's: vigorous physical training with competitive element, mastery at the skill frontier, financial achievement, service. Everything real-intensity, genuinely demanding, genuinely rewarding.

For mephedrone and methylone users whose cathinone use was primarily in social or sexual contexts: the MDMA guide's natural porting framework (genuine connection, oxytocin-activating community, contemplative practice) supplements the stimulant recovery architecture.

PART B — SYNTHETIC CANNABINOIDS

Spice · K2 · Black Mamba · Kush · Scooby Snax · Legal Weed · JWH-018 · AB-FUBINACA · 5F-ADB

These are not cannabis. They are full CB1 agonists. The difference is clinical and potentially lethal.

Part B: A Note Before You Begin

The most important thing to know about synthetic cannabinoids is stated on the cover and repeated here because it is the organizing clinical fact of this entire guide section: these are not cannabis. They are not stronger cannabis. They are not the same drug. They are full agonists at the CB1 cannabinoid receptor — a pharmacological distinction that produces dramatically different and dramatically more dangerous effects than THC, which is a partial agonist at the same receptor.

Spice, K2, Black Mamba, Kush, and their hundreds of compound variants have produced seizures, cardiac events, kidney failures, and deaths. They have been associated with psychosis rates far exceeding natural cannabis. They have been detected at autopsy in deaths that would be categorized as 'cannabis-related' if the specific compound analysis were not performed. They have devastated prison populations, homeless communities, and people in drug-tested employment who chose them specifically to avoid THC detection.

The cannabis guide in this series covers the endocannabinoid system, the CB1/CB2 receptor architecture, FAAH genetics, and the cannabis recovery framework. This guide addresses what is different — why the partial agonist distinction between THC and synthetic cannabinoids is not a matter of degree but of kind.

Section 0B — Immediate Safety: Synthetic Cannabinoids

⚠ NO REVERSAL AGENT EXISTS FOR SYNTHETIC CANNABINOID TOXICITY. THERE IS NO EQUIVALENT OF NALOXONE FOR CB1 RECEPTOR OVERDOSE. CALL 911 FOR ANY SIGNIFICANT ADVERSE EVENT.

Emergency	Signs	Response
Psychosis / severe paranoia	More common and more severe than natural cannabis. Severe paranoid delusions,	Call 911. Safe environment. Calm voice and low stimulation. Benzodiazepine (if available) for

	hallucinations, agitation, loss of reality contact. Can develop within minutes of use.	severe agitation — reduces the anxiety component. Do not leave alone. Tell EMS: synthetic cannabinoid — Spice/K2 — if known.
Seizure	Tonic-clonic seizures documented repeatedly in synthetic cannabinoid toxicity. Not associated with natural cannabis at any typical dose. Can occur on first use.	Recovery position. Call 911. Time the seizure. Do not restrain. Do not put anything in the mouth. EMS needed — the seizure requires medical assessment for metabolic cause and risk of recurrence.
Cardiac events — tachyarrhythmia, MI	Severe tachycardia (heart rate 150–200+), chest pain, irregular heartbeat. More common than with natural cannabis due to the more complete CB1 activation's cardiovascular effects and the direct cardiotoxicity of some synthetic compounds.	Call 911. The person should not exert themselves. Cardiac monitoring. Fluid for hypotension if present. Coronary artery spasm and myocardial infarction have been documented.
Acute kidney injury	Specific to synthetic cannabinoids — not associated with natural cannabis. Flank pain, reduced urine output, vomiting. Associated with specific synthetic cannabinoid compounds in outbreak investigations.	Emergency evaluation. Acute kidney injury from synthetic cannabinoids requires IV fluid resuscitation and nephrology assessment. Early presentation can be treated; delayed presentation risks permanent renal damage.
Hyperthermia	Full CB1 agonism produces more complete hypothalamic dysregulation than THC partial agonism, including hyperthermia risk at high doses.	Cool the person. Call 911. Cooling is the treatment — same protocol as other hyperthermia emergencies.

0B.2 — The Unknown Compound Problem — Even More Severe Than Bath Salts

Synthetic cannabinoids face the same regulatory-evasion compound-change dynamic as synthetic cathinones — but with one additional complication. The potency variability between different synthetic cannabinoid compounds is even more extreme than between cathinones:

- First-generation compounds (JWH-018, JWH-073, 2012): moderate-high potency. Associated with psychosis and tachycardia but rarely life-threatening at typical doses.
- Third-generation compounds (AB-FUBINACA, 5F-ADB, MDMB-4en-PINACA, 2018 onwards): dramatically higher binding affinity and potency. What was a typical dose from older generation products is now a potentially lethal dose

with newer compounds. Outbreaks of mass hospitalizations have occurred from contaminated herbal smoking product containing unexpectedly potent newer compounds.

- Concentration variability: synthetic cannabinoids are sprayed onto inert herbal material. The spraying is not uniform — one section of the product may contain far more compound than an adjacent section. The first use from a bag may be mild; the next use from the same bag may cause seizure.
- No reliable testing: standard drug tests detect THC, not synthetic cannabinoids. This is a feature for users evading drug testing — and a hazard for anyone trying to understand what they have taken.

Section 1B — What Synthetic Cannabinoids Did

THE CENTURION — Full Agonist vs. Partial Agonist: The Distinction That Explains Everything

The entire clinical distinction between natural cannabis and synthetic cannabinoids can be reduced to one pharmacological fact: THC is a CB1 partial agonist. Synthetic cannabinoids are CB1 full agonists. This is not a difference in quantity. It is a difference in kind.

CB1 receptor property	THC (partial agonist)	Synthetic cannabinoids (full agonist)
Maximum possible activation (intrinsic efficacy)	THC can only produce a partial response at CB1 — even at 100% receptor occupancy, the response is limited by THC's partial agonism.	Full agonists produce the maximum possible CB1 response — the receptor fires at full capacity. The same receptor produces a qualitatively different magnitude of response.
Psychosis risk	Cannabis psychosis risk is real, dose-dependent, and modulated by AKT1 and other genetic factors — but even at high doses, the partial agonism limits the maximal dopaminergic dysregulation.	Full CB1 agonism in the mesolimbic pathway produces more complete dopaminergic dysregulation. The psychosis risk is proportionally higher. Some synthetic cannabinoid compounds have produced psychosis at what would be 'first try' doses in drug-naive individuals.
Cardiovascular effects	Mild to moderate tachycardia. Cardiovascular events extremely rare at typical doses.	Severe tachycardia common. Cardiac arrhythmia documented. Myocardial infarction documented in young people with no prior cardiac

		history.
Tolerance and withdrawal	CB1 receptor downregulation with heavy use produces the cannabis withdrawal syndrome — milder than most substance withdrawals.	CB1 receptor downregulation is more complete with full agonists — the withdrawal syndrome is correspondingly more severe: more intense insomnia, more intense anxiety, more intense dysphoria. Documented seizures during synthetic cannabinoid withdrawal (not typical of cannabis withdrawal).
Kidney toxicity	Not associated with natural cannabis or THC.	Specific acute kidney injury pattern documented in multiple synthetic cannabinoid outbreak investigations. Mechanism unclear — may involve direct nephrotoxicity of specific compounds rather than CB1 activation per se.

1B.2 — The Drug Testing Evasion Population

THE CENTURION — The Substance People Used Because They Had to Pass a Test — And Why This Shapes Recovery

A defining feature of synthetic cannabinoid use is the population context: unlike most substances in this series, synthetic cannabinoids are often chosen not because they are preferred but because they evade drug testing for THC. The populations most affected:

- Prison and jail populations: cannabis-derived THC is detectable on urine drug tests administered in correctional settings. Synthetic cannabinoids were for years undetectable on standard panels. The result: extraordinary prevalence of synthetic cannabinoid use in correctional settings, associated with the outbreaks of psychosis, seizure, and cardiac events that have made these facilities medical emergency sites.
- Military personnel: similar drug testing evasion motive. Synthetic cannabinoid use in military contexts has produced documented adverse events and generated significant military policy response.
- Drug-tested employment: people in safety-sensitive positions who use cannabis recreationally may switch to synthetic cannabinoids to pass workplace drug tests.
- Probation and parole: drug testing compliance requirements create the same evasion motive as incarceration.

The implication for recovery: the person who used synthetic cannabinoids primarily to pass a drug test has a different recovery architecture than the person who used them as a preferred substance. For the testing-evasion user, the recovery may involve addressing the underlying cannabis use disorder AND the institutional

context that created the evasion motive — potentially including advocacy for more accurate drug testing that detects both THC and synthetic cannabinoids.

1B.3 — The Endocannabinoid System Under Full Agonist Attack

The compendium's endocannabinoid entry in the C-28 natural addiction porting table: 'Cannabis → Calm, creativity, escape boredom → Endocannabinoid system, mixed COMT → Creative pursuits, nature, structured calm.' This framework applies to synthetic cannabinoids, but with greater severity at every point.

The endocannabinoid system's primary functions — stress response modulation, pain modulation, appetite, mood, sleep, and the 'runner's high' endocannabinoid anandamide effect — are all mediated through CB1 and CB2 receptors. Full CB1 agonism by synthetic cannabinoids produces more complete receptor downregulation with heavy use, more severe disruption of all these functions, and a withdrawal syndrome that reflects the more complete receptor suppression.

Recovery requires rebuilding natural CB1 activation through the same mechanisms the compendium identifies: creative pursuits that produce anandamide through flow states, nature and awe (documented anandamide activators), exercise (the 'runner's high' is endocannabinoid-mediated), and the structured calm of contemplative practice.

Section 2B — Genomic Blueprint

Gene	What it controls	Synthetic cannabinoid recovery relevance
CNR1	CB1 cannabinoid receptor gene — the primary target of synthetic cannabinoids	CNR1 variants affect baseline CB1 receptor density and sensitivity. High-expression CNR1 variants may experience more potent synthetic cannabinoid effects and more severe withdrawal from full agonist use. CNR1 variants are also associated with cannabis use disorder — and the synthetic cannabinoid user with CNR1 high-risk variants may have had an underlying predisposition to cannabinoid system dysregulation before any substance use.
AKT1	Serine/ threonine kinase — modulates dopamine signaling in response to cannabinoid	AKT1 rs2494732 T/T genotype is strongly associated with cannabis psychosis risk — and applies to synthetic cannabinoid psychosis risk with even greater force, because the full CB1 agonism produces more complete AKT1-pathway dopamine dysregulation than THC. The cannabis guide identifies AKT1 as the primary psychosis risk gene; it is equally relevant here and the threshold

	CB1 receptor activation in the striatum	for psychosis is lower.
FAAH	Fatty acid amide hydrolase — enzyme that breaks down anandamide (the endogenous cannabinoid)	FAAH C385A variant (AA genotype) produces lower FAAH activity — slower anandamide breakdown — meaning higher baseline anandamide tone. People with AA genotype have lower anxiety and less exogenous cannabinoid seeking at baseline. They may have used synthetic cannabinoids in a context where the endocannabinoid system was already functioning adequately, making the recovery easier once the exogenous compound is removed. CA/CC genotype: lower baseline anandamide → more endocannabinoid deficit → more severe synthetic cannabinoid withdrawal → more difficult recovery.
COMT	Dopamine clearance — psychosis risk through the dopamine dimension of CB1 activation	Met/Met (Sage) + AKT1 T/T is the highest synthetic cannabinoid psychosis risk combination. The Sage nervous system's already-elevated dopamine and catecholamine tone, combined with AKT1-mediated dopamine dysregulation from full CB1 agonism, creates a specific neurobiological configuration for psychosis precipitation. This combination should be considered a near-absolute contraindication to synthetic cannabinoid use.
MTHFR	Methylation — affects endocannabinoid system indirectly through homocysteine and methylation-dependent processes	MTHFR variants affect homocysteine levels, which influence the endocannabinoid system through several indirect pathways. The primary recovery relevance: 5-MTHF supplementation supports the anxiety, depression, and cognitive repair that synthetic cannabinoid withdrawal and heavy use produce through the methylation-dependent neurotransmitter synthesis dimension.

Section 3B — Biological Reconstruction: Synthetic Cannabinoid Recovery

THE CENTURION — More Severe Than Cannabis Withdrawal — Because the Receptor Downregulation Is More Complete

3B.1 — The Withdrawal Timeline

Timeline	Biology	Experience	Management

Hours 12–24	CB1 receptor upregulation beginning; endocannabinoid system attempting to compensate for withdrawal of full agonist	Anxiety, insomnia, craving, irritability — similar to cannabis withdrawal but more intense	Magnesium glycinate, L-theanine. Low-sensory environment. CBD (if available and legal — see 3B.3) may reduce withdrawal severity through partial CB1/CB2 modulation.
Days 1–4 (peak)	Maximum CB1 receptor upregulation; endocannabinoid system at maximum deficit; sympathetic nervous system activation	Severe insomnia (the most prominent symptom), profuse sweating, nausea and vomiting, tremor, anxiety, restlessness. In some cases: seizure (medical emergency — call 911). More severe than cannabis withdrawal in most measures.	Seizure risk: if severe withdrawal symptoms are present, medical supervision is appropriate. Benzodiazepines manage both the anxiety and the seizure risk. Hydroxyzine for sleep. GABA-supportive stack (magnesium, L-theanine, taurine).
Weeks 1–4	CB1 receptor density recovering; sleep architecture slowly normalizing; anxiety beginning to resolve	Improvement with variability. PAWS: episodic anxiety, insomnia recurrence, strong cravings — triggered by environmental cues and stress.	Full supplement stack. Exercise daily from Week 1. The cannabis recovery sonic protocol applies: delta binaural beats for sleep; 80–100 BPM for daytime; fresh genres not associated with using.
Months 1–6	Substantial CB1 receptor recovery; natural endocannabinoid function gradually returning; BDNF supporting neuroplastic repair	Progressive recovery. Natural calm, creativity, and stress management capacity gradually returning through endocannabinoid system restoration and the natural activation practices.	Build the natural endocannabinoid architecture (Section 3B.4). ADHD treatment if underlying ADHD was present. Depression/anxiety treatment.

3B.2 — The Biological Reconstruction Stack

Supplement	Dose	Timing	Synthetic cannabinoid-specific notes
Magnesium glycinate	400–600mg elemental	Morning and evening	GABA-A receptor support and NMDA modulation for the

			anxious hyperexcitability of synthetic cannabinoid withdrawal. The most immediately effective supplement for the anxiety and insomnia of withdrawal. Begin Day 1.
L-Theanine	200–400mg	Morning and evening	GABA and glutamate modulation; anxiolytic without sedation during the day; sleep support in the evening. Directly relevant to the CB1 withdrawal anxiety mechanism.
5-MTHF + Methylcobalamin	5-MTHF 400mcg; B12 1000mcg	Morning	Methylation foundation for neurotransmitter synthesis recovery across all systems disrupted by CB1 downregulation — particularly the serotonin and dopamine dimensions of the endocannabinoid-monoamine system interaction.
NAC	600–1200mg twice daily	Morning and evening with food	Glutamate homeostasis; anti-neuroinflammatory; craving reduction. The CB1 receptor-glutamate interaction means NAC's glutamate-normalizing effect is specifically relevant for synthetic cannabinoid withdrawal.
Omega-3 DHA + EPA	2–4g daily	Morning with food	Endocannabinoid system membrane support. CB1 receptors are embedded in phospholipid neuronal membranes — DHA's membrane-supporting role directly supports the receptor density recovery. Anti-neuroinflammatory for the neuroinflammation of heavy synthetic cannabinoid use.
Taurine	1000–2000mg	Morning	GABA-mimetic; cardiovascular support — relevant given synthetic cannabinoids' documented cardiac toxicity; anxiety reduction. The same rationale as taurine in energy drink and stimulant recovery but through the GABAergic rather than adrenergic mechanism.
Melatonin (low dose)	0.5–1mg sublingual	30–60 min before bed, consistent time	The insomnia of synthetic cannabinoid withdrawal is the most reported and most

			distressing symptom. Consistent low-dose melatonin provides the circadian signal without pharmacological dependence. Combined with magnesium glycinate and glycine (3g), the sleep protocol addresses the most acutely debilitating withdrawal symptom.

3B.3 — CBD: The Legitimate Endocannabinoid Harm Reduction Tool

THE CENTURION — Cannabidiol Is Not a Synthetic Cannabinoid — It Is a Different Compound Entirely

CBD (cannabidiol) is frequently confused with THC and with synthetic cannabinoids because it comes from the same plant family. It is pharmacologically distinct from both:

- CBD does not significantly activate CB1 or CB2 receptors. It does not produce the psychoactive effects of THC or the severe effects of synthetic cannabinoids.
- CBD has negative allosteric modulation at CB1 receptors — it slightly reduces CB1 receptor activation from other cannabinoids. It may reduce the severity of both cannabis and synthetic cannabinoid withdrawal through this mechanism.
- CBD has documented anxiolytic and antipsychotic properties. It has been used in research specifically for cannabis use disorder and has emerging evidence for synthetic cannabinoid withdrawal management.
- If legal where the person is located: CBD oil (not a hemp-based CBD product from unknown sources but pharmaceutical-grade CBD where available, or high-quality documented-purity CBD oil) may support synthetic cannabinoid withdrawal management alongside the full stack. Dose range: 150–600mg daily has been used in cannabinoid withdrawal research.
- CBD does not cure synthetic cannabinoid withdrawal. It may reduce severity. It is not a substitute for the medical management of severe withdrawal (which requires benzodiazepines and possibly antipsychotics).

3B.4 — Natural Endocannabinoid Architecture

The compendium's C-28 framework for cannabis: 'Creative pursuits, nature, structured calm.' For synthetic cannabinoid recovery — where the CB1 system has been more completely suppressed — these natural activators are both more difficult to access in early recovery (because CB1 is more thoroughly downregulated) and more important for the long-term restoration of natural endocannabinoid tone.

- Exercise — specifically sustained aerobic exercise: the 'runner's high' is mediated by the endocannabinoid system, specifically anandamide release, not endorphins as historically believed. Sustained aerobic exercise (45+ minutes) produces the most reliable natural anandamide release available. This is pharmacologically specific to endocannabinoid recovery.
- Nature exposure and awe: natural environments are documented anandamide activators through the same mechanisms as awe — the parasympathetic activation and the dissolution of ordinary self-focus. For synthetic cannabinoid recovery, time in natural environments is not merely pleasant — it is biologically relevant endocannabinoid system activation.
- Creative flow states: the flow state (challenge at the skill frontier) activates anandamide alongside dopamine, serotonin, norepinephrine, and endorphins. For the person whose synthetic cannabinoid use was primarily about escape from boredom or stress: creative mastery is the structural answer.
- Meditation and contemplative practice: the reduction of the default mode network's ordinary self-referential activity is associated with anandamide release — the same mechanism as the endocannabinoid component of the 'flow' and 'awe' experiences. Long-term meditators show elevated endocannabinoid tone.
- Lion's mane mushroom (500–1000mg daily): the compendium explicitly names lion's mane as BDNF/NGF stimulating with good clinical evidence. Neurotrophin support for the CB1 receptor system recovery and the cognitive repair that synthetic cannabinoid use impairs.

3B.5 — The Craving Interrupt for Synthetic Cannabinoids

Synthetic cannabinoid cravings share characteristics with cannabis cravings (environmental cue-triggered, driven by anxiety and stress) but with the additional complication of the testing-evasion motive — for the person in a drug-tested environment, the craving for a 'clean' option may be specifically directed toward synthetic cannabinoids even in recovery.

7. NAME THE CRAVING TYPE: Is this an endocannabinoid deficit craving (anxiety, restlessness, need for calm), a stress-triggered cue, or a testing-evasion rational ('I need to pass my test')? Each requires a different response.
8. 4-7-8 BREATHING — SIX CYCLES. The parasympathetic activation of the 4-7-8 pattern directly activates the same calming pathways the CB1 receptor was mediating — it is the closest available non-pharmacological substitute for the anxiolytic effect.
9. NATURE EXPOSURE OR VIGOROUS EXERCISE. The most pharmacologically specific natural alternative to CB1 activation — anandamide release through either route.
10. FOR TESTING-EVASION CRAVINGS: Address the testing context. If on probation or parole — discuss the testing panel with your legal team. Many panels have been updated to detect specific synthetic cannabinoids. The 'safe' testing evasion option may no longer be either safe or evading. The

clinical framework for this: the harms of synthetic cannabinoid use far exceed the harms of testing positive for cannabis in most contexts.

11. CBD (if appropriate): if CBD is accessible, the acute anxiolytic effect may reduce the craving in the same time window that NAC and magnesium are being absorbed.
12. CONTACT. The isolation that synthetic cannabinoid use enables (no smell, no paraphernalia, no detectable metabolites) also allows it to continue without social accountability. Connection is the counter-substance.

Section 7 — The Integrated View: Novel Psychoactive Substances and the Regulatory Chase

THE CENTURION — The Molecule Changed. The Biology Didn't. The Recovery Framework Was Always the Same.

Synthetic cathinones and synthetic cannabinoids exist because chemists can modify molecules faster than regulators can schedule them. The compounds keep changing. The pharmacological families stay the same. MDPV was scheduled; alpha-PVP emerged. Alpha-PVP was scheduled; MDPHP emerged. JWH-018 was scheduled; AB-FUBINACA emerged. AB-FUBINACA was scheduled; 5F-ADB emerged. Each new compound was more potent, less studied, and more dangerous than its predecessor.

The people caught in this regulatory chase were not choosing novelty for novelty's sake. They were choosing availability, affordability, or testing evasion. The populations — people in prisons using synthetic cannabinoids because THC testing fails them, people in low-income communities using MDPV as a cheap cocaine substitute, people in chemsex contexts where mephedrone and methylone were the accessible options — were not the target of the regulatory systems that kept changing the compounds. They were the collateral.

Recovery from synthetic cathinones is stimulant recovery. The dopamine architecture, the Warrior intensity needs, the natural high-intensity framework — these apply to the compounds identically to cocaine and methamphetamine. The cathinone-specific additions are the unknown-compound problem, the excited delirium risk that exceeds the classical stimulants, and the pure-dopamine psychosis liability of MDPV and alpha-PVP.

Recovery from synthetic cannabinoids is cannabinoid recovery — but calibrated for the more complete CB1 receptor downregulation of full agonism. The endocannabinoid natural architecture (exercise-anandamide, nature, creative flow, contemplative practice) is the same framework. The withdrawal severity, the seizure risk, the kidney toxicity, and the psychosis liability are specific to the full agonist pharmacology and require the amplifications this guide provides.

For both categories: the Recovery Kernel's foundation applies without modification. The substance masking analysis — what was the substance providing? what does that signal point to? — produces clear answers. Extreme stimulant intensity (Warrior constitution, RDS). Calm, creativity, and stress escape (endocannabinoid deficit, CNR1). The answers determine the natural architecture. The natural architecture is the recovery.

The molecule changed. The recovery was always the same.

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NPS harm reduction: talktofrank.com | Drug policy information: drugpolicy.org | Crisis: 988 | SAMHSA: 1-800-662-4357

Refer to the Recovery Kernel Complete Centurion Compendium for all referenced protocols.

Crisis: call or text 988 | Emergency: 911 | SAMHSA: 1-800-662-4357

How to Recover from Novel Psychoactive Substances Using the Recovery Kernel | Substance-Specific Navigation Series